

WHAT IS CLAIMED IS:

- Sub A2
1. An optical processing method comprising the steps of:  
preparing a semiconductor film over a substrate;  
irradiating a laser light onto said semiconductor film, and  
controlling an irradiation energy of said laser light based on a refractive index of said semiconductor film on which said laser light has been irradiated so that the refractive index of said semiconductor film is within a predetermined range.
  2. An optical processing method according to claim 1 wherein said laser light is selected from the group consisting of KrF excimer laser light, ArF excimer laser light and XeCl excimer laser light.
  3. An optical processing method according to claim 1 wherein said irradiating step is performed by relatively scanning said laser light with respect to said substrate.
  4. An optical processing method according to claim 1 wherein said refractive index is measured by an ellipsometer.
  - Sub A3
  5. An optical processing method comprising the steps of:  
preparing a semiconductor film formed over a substrate;  
irradiating a laser light onto said semiconductor film; and  
controlling an irradiation energy of said laser light based on a refractive index of said semiconductor film on which said laser light has been irradiated,  
wherein said laser light is repeatedly irradiated onto said semiconductor film until the refractive index of said semiconductor film becomes within a predetermined range.
  6. An optical processing method according to claim 5 wherein said laser light is selected from the group consisting of KrF excimer laser light, ArF excimer laser light and XeCl excimer laser light.
  7. An optical processing method according to claim 5 wherein said irradiating step is performed by relatively scanning said laser light with respect to said substrate.

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8. An optical processing method according to claim 5 wherein said refractive index is measured by an ellipsometer.

9. An optical processing method comprising the steps of:  
preparing a semiconductor film formed over a substrate;  
irradiating a first laser light onto said semiconductor film; and  
irradiating a second laser light onto said semiconductor film,  
wherein an irradiation energy of said second laser light is controlled so that a refractive index is within a predetermined range.

10. An optical processing method according to claim 9 wherein each of said first and second laser lights is selected from the group consisting of KrF excimer laser light, ArF excimer laser light and XeCl excimer laser light.

11. An optical processing method according to claim 9 wherein said irradiating step using each of said first and second laser lights is performed by relatively scanning said laser light with respect to said substrate.

12. An optical processing method according to claim 9 wherein said refractive index is measured by an ellipsometer.

13. An optical processing method comprising the steps of:  
preparing a semiconductor film formed over a substrate;  
irradiating a first laser light onto said semiconductor film;  
measuring a first refractive index of said semiconductor film on which said first laser light has been irradiated; and  
irradiating a second laser light onto said semiconductor film,  
measuring a second refractive index of said semiconductor film on which said second laser light has been irradiated,  
wherein an irradiation energy of said second laser light is controlled based on said first refractive index.

14. An optical processing method according to claim 13 wherein each of said first and second laser lights is selected from the group consisting of KrF excimer laser light, ArF excimer laser light and XeCl excimer laser light.

15. An optical processing method according to claim 13 wherein said irradiating step using each of said first and second laser lights is performed by relatively scanning said laser lights with respect to said substrate.

16. An optical processing method according to claim 13 wherein said first and second refractive index are measured by an ellipsometer.

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Sub A6  
17. An optical processing method comprising the steps of:  
preparing a first semiconductor film over a first substrate;  
irradiating a first laser light onto said first semiconductor film;  
measuring a refractive index of said first semiconductor film;  
preparing a second semiconductor film formed over a second substrate; and  
irradiating a second laser light onto said second semiconductor film,  
wherein an irradiation energy of said second laser light is controlled based on the refractive index of said first semiconductor film so that the refractive index of said second semiconductor film is within a predetermined range.

18. An optical processing method according to claim 17 wherein each of said first and second laser lights is selected from the group consisting of KrF excimer laser light, ArF excimer laser light and XeCl excimer laser light.

19. An optical processing method according to claim 17 wherein said irradiating step using said first light is performed by relatively scanning said first laser light with respect to said first substrate.

20. An optical processing method according to claim 17 wherein said irradiating step using said second light is performed by relatively scanning said second laser light with respect to said second substrate.

21. An optical processing method according to claim 17 wherein said refractive index is measured by an ellipsometer.

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